289779USOPCT.ST25 SEQUENCE LISTING

Sa Oz Ko	ohata, Masatoshi awada, Kazuhisa zaki, Katsuya obayashi, Kazuo gasawara, Naotake	
<120> RE	ECOMBINANT MICROORGANISM	
<130> 28	89779US0PCT	
	0/578,613 006-05-08	
	CT/JP04/16891 004-11-05	
	P 2003-379167 003-11-07	
<160> 12	22	
<170> Pa	atentIn version 3.3	
<212> DN	150 NA acillus sp. KSM-S237	
<220> <221> CE <222> (5	DS 573)(3044)	
	ig_peptide 573)(659)	
<400> 1 gatttgccg	ga tgcaacaggc ttatatttag aggaaatttc tttttaaatt gaatacggaa	60
taaaatcag	gg taaacaggtc ctgattttat ttttttgagt tttttagaga actgaagatt	120
gaaataaaa	ag tagaagacaa aggacataag aaaattgcat tagttttaat tatagaaaac	180
gccttttta	at aattattat acctagaacg aaaatactgt ttcgaaagcg gtttactata	240
aaaccttat	ta ttccggctct tttttaaaac agggggtaaa aattcactct agtattctaa	300
tttcaacat	tg ctataataaa tttgtaagac gcaatatgca tctcttttt tacgatatat	360
gtaagcggt	tt aaccttgtgc tatatgccga tttaggaagg ggggtagatt gagtcaagta	420
gtaataata	at agataactta taagttgttg agaagcagga gagcatctgg gttactcaca	480
agtttttt	ta aaactttaac gaaagcactt tcggtaatgc ttatgaattt agctatttga	540
ttcaattac	ct ttaaaaatat ttaggaggta at atg atg tta aga aag aaa aca Met Met Leu Arg Lys Lys Thr 1 5	593
Lys Gln L	ttg att tct tcc att ctt att tta gtt tta ctt cta tct tta Leu Ile Ser Ser Ile Leu Ile Leu Val Leu Leu Ser Leu 10 15 20	641
ttt ccg g Phe Pro A	gca gct ctt gca gca gaa gga aac act cgt gaa gac aat ttt Ala Ala Leu Ala Ala Glu Gly Asn Thr Arg Glu Asp Asn Phe Page 1	689

	23					30					<i></i>					
aaa Lys 40	cat His	tta Leu	tta Leu	ggt Gly	aat Asn 45	gac Asp	aat Asn	gtt Val	aaa Lys	cgc Arg 50	cct Pro	tct Ser	gag Glu	gct Ala	ggc Gly 55	737
gca Ala	tta Leu	caa Gln	tta Leu	caa Gln 60	gaa Glu	gtc Val	gat Asp	gga Gly	caa Gln 65	atg Met	aca Thr	tta Leu	gta Val	gat Asp 70	caa Gln	785
cat His	gga Gly	gaa Glu	aaa Lys 75	att Ile	caa Gln	tta Leu	cgt Arg	gga Gly 80	atg Met	agt Ser	aca Thr	cac His	gga Gly 85	tta Leu	cag Gln	833
tgg Trp	ttt Phe	cct Pro 90	gag Glu	atc Ile	ttg Leu	aat Asn	gat Asp 95	aac Asn	gca Ala	tac Tyr	aaa Lys	gct Ala 100	ctt Leu	tct Ser	aac Asn	881
gat Asp	tgg Trp 105	gat Asp	tcc Ser	aat Asn	atg Met	att Ile 110	cgt Arg	ctt Leu	gct Ala	atg Met	tat Tyr 115	gta Val	ggt Gly	gaa Glu	aat Asn	929
ggg Gly 120	tac Tyr	gct Ala	aca Thr	aac Asn	cct Pro 125	gag Glu	tta Leu	atc Ile	aaa Lys	caa Gln 130	aga Arg	gtg val	att Ile	gat Asp	gga Gly 135	977
att Ile	gag Glu	tta Leu	gcg Ala	att Ile 140	gaa Glu	aat Asn	gac Asp	atg Met	tat Tyr 145	gtt Val	att Ile	gtt Val	gac Asp	tgg Trp 150	cat His	1025
gtt Val	cat His	gcg Ala	cca Pro 155	ggt Gly	gat Asp	cct Pro	aga Arg	gat Asp 160	cct Pro	gtt Val	tat Tyr	gca Ala	ggt Gly 165	gct Ala	aaa Lys	1073
gat Asp	ttc Phe	ttt Phe 170	aga Arg	gaa Glu	att Ile	gca Ala	gct Ala 175	tta Leu	tac Tyr	cct Pro	aat Asn	aat Asn 180	cca Pro	cac His	att Ile	1121
att Ile	tat Tyr 185	gag Glu	tta Leu	gcg Ala	aat Asn	gag Glu 190	ccg Pro	agt Ser	agt Ser	aat Asn	aat Asn 195	aat Asn	ggt Gly	gga Gly	gca Ala	1169
ggg Gly 200	att Ile	ccg Pro	aat Asn	aac Asn	gaa Glu 205	gaa Glu	ggt Gly	tgg Trp	aaa Lys	gcg Ala 210	gta Val	aaa Lys	gaa Glu	tat Tyr	gct Ala 215	1217
gat Asp	cca Pro	att Ile	val	Glu	Met	tta Leu	Arg	Lys	Ser	ggt Gly	aat Asn	gca Ala	gat Asp	gac Asp 230	aac Asn	1265
att Ile	atc Ile	att Ile	gtt Val 235	ggt Gly	agt Ser	cca Pro	aac Asn	tgg Trp 240	agt Ser	cag Gln	cgt Arg	ccg Pro	gac Asp 245	tta Leu	gca Ala	1313
gct Ala	gat Asp	aat Asn 250	cca Pro	att Ile	gat Asp	gat Asp	cac His 255	cat His	aca Thr	atg Met	tat Tyr	act Thr 260	gtt Val	cac His	ttc Phe	1361
tac Tyr	act Thr 265	ggt Gly	tca Ser	cat His	gct Ala	gct Ala 270	tca Ser	act Thr	gaa Glu	agc Ser	tat Tyr 275	ccg Pro	tct Ser	gaa Glu	act Thr	1409
cct Pro 280	aac Asn	tct Ser	gaa Glu	aga Arg	gga Gly 285	aac Asn	gta Val	atg Met	agt Ser	aac Asn 290	act Thr	cgt Arg	tat Tyr	gcg Ala	tta Leu 295	1457
gaa Glu	aac Asn	gga Gly	gta Val	gcg Ala	gta Val	ttt Phe	gca Ala	aca Thr	Glu	tgg Trp ige 2	Gly	acg Thr	agt Ser	caa Gln	gct Ala	1505

				300					303							
agt Ser	gga Gly	gac Asp	ggt Gly 315	ggt Gly	cct Pro	tac Tyr	ttt Phe	gat Asp 320	gaa Glu	gca Ala	gat Asp	gta Val	tgg Trp 325	att Ile	gaa Glu	1553
ttt Phe	tta Leu	aat Asn 330	gaa Glu	aac Asn	aac Asn	att Ile	agc Ser 335	tgg Trp	gct Ala	aac Asn	tgg Trp	tct Ser 340	tta Leu	acg Thr	aat Asn	1601
aaa Lys	aat Asn 345	gaa Glu	gta Val	tct Ser	ggt Gly	gca Ala 350	ttt Phe	aca Thr	cca Pro	ttc Phe	gag Glu 355	tta Leu	ggt Gly	aag Lys	tct Ser	1649
aac Asn 360	gca Ala	acc Thr	aat Asn	ctt Leu	gac Asp 365	cca Pro	ggt Gly	cca Pro	gat Asp	cat His 370	gtg Val	tgg Trp	gca Ala	cca Pro	gaa Glu 375	1697
gaa Glu	tta Leu	agt Ser	ctt Leu	tct ser 380	gga Gly	gaa Glu	tat Tyr	gta Val	cgt Arg 385	gct Ala	cgt Arg	att Ile	aaa Lys	ggt Gly 390	gtg Val	1745
aac Asn	tat Tyr	gag Glu	cca Pro 395	atc Ile	gac Asp	cgt Arg	aca Thr	aaa Lys 400	tac Tyr	acg Thr	aaa Lys	gta Val	ctt Leu 405	tgg Trp	gac Asp	1793
ttt Phe	aat Asn	gat Asp 410	gga Gly	acg Thr	aag Lys	caa Gln	gga Gly 415	ttt Phe	gga Gly	gtg Val	aat Asn	tcg ser 420	gat Asp	tct Ser	cca Pro	1841
aat Asn	aaa Lys 425	gaa Glu	ctt Leu	att Ile	gca Ala	gtt Val 430	gat Asp	aat Asn	gaa Glu	aac Asn	aac Asn 435	act Thr	ttg Leu	aaa Lys	gtt Val	1889
tcg Ser 440	gga Gly	tta Leu	gat Asp	gta Val	agt Ser 445	aac Asn	gat Asp	gtt Val	tca Ser	gat Asp 450	ggc Gly	aac Asn	ttc Phe	tgg Trp	gct Ala 455	1937
aat Asn	gct Ala	cgt Arg	ctt Leu	tct Ser 460	gcc Ala	aac Asn	ggt Gly	tgg Trp	gga Gly 465	aaa Lys	agt Ser	gtt Val	gat Asp	att Ile 470	tta Leu	1985
ggt Gly	gct Ala	gag Glu	aag Lys 475	ctt Leu	aca Thr	atg Met	gat Asp	gtt Val 480	att Ile	gtt Val	gat Asp	gaa Glu	cca Pro 485	acg Thr	acg Thr	2033
gta Val	ĀΊa	Ile	Ala	Ala	att Ile	Pro	Gln	Ser	Ser	Lys	Ser	gga Gly 500	tgg Trp	gca Ala	aat Asn	2081
cca Pro	gag Glu 505	cgt Arg	gct Ala	gtt Val	cga Arg	gtg Val 510	aac Asn	gcg Ala	gaa Glu	gat Asp	ttt Phe 515	gtc Val	cag Gln	caa Gln	acg Thr	2129
gac Asp 520	ggt Gly	aag Lys	tat Tyr	aaa Lys	gct Ala 525	gga Gly	tta Leu	aca Thr	att Ile	aca Thr 530	gga Gly	gaa Glu	gat Asp	gct Ala	cct Pro 535	2177
aac Asn	cta Leu	aaa Lys	aat Asn	atc Ile 540	gct Ala	ttt Phe	cat His	gaa Glu	gaa Glu 545	gat Asp	aac Asn	aat Asn	atg Met	aac Asn 550	Asn	2225
atc Ile	att Ile	ctg Leu	ttc Phe 555	gtg Val	gga Gly	act Thr	gat Asp	gca Ala 560	gct Ala	gac Asp	gtt Val	att Ile	tac Tyr 565	tta Leu	gat Asp	2273
aac Asn	att Ile	aaa Lys	gta Val	att Ile	gga Gly	aca Thr	gaa Glu	gtt Val	Glu	att Ile .ge 3	Pro	gtt Val	gtt Val	cat His	gat Asp	2321

cca Pro	aaa Lys 585	gga Gly	gaa Glu	gct Ala	gtt Val	ctt Leu 590	cct Pro	tct Ser	gtt Val	ttt Phe	gaa Glu 595	gac Asp	ggt Gly	aca Thr	cgt Arg	;	2369
caa Gln 600	ggt Gly	tgg Trp	gac Asp	tgg Trp	gct Ala 605	gga Gly	gag Glu	tct Ser	ggt Gly	gtg Val 610	aaa Lys	aca Thr	gct Ala	tta Leu	aca Thr 615	:	2417
att Ile	gaa Glu	gaa Glu	gca Ala	aac Asn 620	ggt Gly	tct Ser	aac Asn	gcg Ala	tta Leu 625	tca Ser	tgg Trp	gaa Glu	ttt Phe	gga Gly 630	tat Tyr	:	2465
cca Pro	gaa Glu	gta Val	aaa Lys 635	cct Pro	agt Ser	gat Asp	aac Asn	tgg Trp 640	gca Ala	aca Thr	gct Ala	cca Pro	cgt Arg 645	tta Leu	gat Asp		2513
ttc Phe	tgg Trp	aaa Lys 650	tct Ser	gac Asp	ttg Leu	gtt Val	cgc Arg 655	ggt Gly	gag Glu	aat Asn	gat Asp	tat Tyr 660	gta Val	gct Ala	ttt Phe		2561
gat Asp	ttc Phe 665	tat Tyr	cta Leu	gat Asp	cca Pro	gtt Val 670	cgt Arg	gca Ala	aca Thr	gaa Glu	ggc Gly 675	gca Ala	atg Met	aat Asn	atc Ile		2609
aat Asn 680	tta Leu	gta Val	ttc Phe	cag Gln	cca Pro 685	cct Pro	act Thr	aac Asn	ggg Gly	tat Tyr 690	tgg Trp	gta Val	caa Gln	gca Ala	cca Pro 695		2657
aaa Lys	acg Thr	tat Tyr	acg Thr	att Ile 700	aac Asn	ttt Phe	gat Asp	gaa Glu	tta Leu 705	gag Glu	gaa Glu	gcg Ala	aat Asn	caa Gln 710	gta Val		2705
aat Asn	ggt Gly	tta Leu	tat Tyr 715	cac His	tat Tyr	gaa Glu	gtg Val	aaa Lys 720	att Ile	aac Asn	gta Val	aga Arg	gat Asp 725	att Ile	aca Thr		2753
aac Asn	att Ile	caa Gln 730	gat Asp	gac Asp	acg Thr	tta Leu	cta Leu 735	cgt Arg	aac Asn	atg Met	atg Met	atc Ile 740	att Ile	ttt Phe	gca Ala		2801
gat Asp	gta Val 745	gaa Glu	agt Ser	gac Asp	ttt Phe	gca Ala 750	ggg Gly	aga Arg	gtc Val	ttt Phe	gta Val 755	gat Asp	aat Asn	gtt Val	cgt Arg		2849
ttt Phe 760	gag Glu	ggg Gly	gct Ala	gct Ala	act Thr 765	act Thr	gag Glu	ccg Pro	gtt Val	gaa Glu 770	cca Pro	gag Glu	cca Pro	gtt Val	gat Asp 775		2897
cct Pro	ggc Gly	gaa Glu	gag Glu	acg Thr 780	cca Pro	cct Pro	gtc Val	gat Asp	gag Glu 785	aag Lys	gaa Glu	gcg Ala	aaa Lys	aaa Lys 790	gaa Glu		2945
caa Gln	aaa Lys	gaa Glu	gca Ala 795	gag Glu	aaa Lys	gaa Glu	gag Glu	aaa Lys 800	Glu	gca Ala	gta Val	aaa Lys	gaa Glu 805	gaa Glu	aag Lys		2993
aaa Lys	gaa Glu	gct Ala 810	Lys	gaa Glu	gaa Glu	aag Lys	aaa Lys 815	gca Ala	gtc Val	aaa Lys	aat Asn	gag Glu 820	Ala	aag Lys	aaa Lys		3041
aaa Lys	taa	tcta	tta	aact	agtt	at a	gggt	tatc	t aa	aggt	ctga	tgt	agat	ctt			3094
tta	gata	acc	tttt	tctt	gc a	taac	tgga	c ac	agag -	ttgt	tat	taaa	.gaa	agta	ag		3150

<210> 824 Bacillus sp. KSM-S237 <400> Met Met Leu Arg Lys Lys Thr Lys Gln Leu Ile Ser Ser Ile Leu Ile 1 10 15 Leu Val Leu Leu Ser Leu Phe Pro Ala Ala Leu Ala Ala Glu Gly
20 25 30 Asn Thr Arg Glu Asp Asn Phe Lys His Leu Leu Gly Asn Asp Asn Val Lys Arg Pro Ser Glu Ala Gly Ala Leu Gln Leu Gln Glu Val Asp Gly 50 60 Gln Met Thr Leu Val Asp Gln His Gly Glu Lys Ile Gln Leu Arg Gly 65 70 75 80 Met Ser Thr His Gly Leu Gln Trp Phe Pro Glu Ile Leu Asn Asp Asn 85 90 95 Ala Tyr Lys Ala Leu Ser Asn Asp Trp Asp Ser Asn Met Ile Arg Leu 100 105 110Ala Met Tyr Val Gly Glu Asn Gly Tyr Ala Thr Asn Pro Glu Leu Ile 115 120 125 Lys Gln Arg Val Ile Asp Gly Ile Glu Leu Ala Ile Glu Asn Asp Met 130 140 Tyr Val Ile Val Asp Trp His Val His Ala Pro Gly Asp Pro Arg Asp 145 150 155 Pro Val Tyr Ala Gly Ala Lys Asp Phe Phe Arg Glu Ile Ala Ala Leu 165 170 175 Tyr Pro Asn Asn Pro His Ile Ile Tyr Glu Leu Ala Asn Glu Pro Ser 180 185 190 Ser Asn Asn Asn Gly Gly Ala Gly Ile Pro Asn Asn Glu Glu Gly Trp 195 200 205 Lys Ala Val Lys Glu Tyr Ala Asp Pro Ile Val Glu Met Leu Arg Lys 210 215 220 Ser Gly Asn Ala Asp Asp Asn Ile Ile Ile Val Gly Ser Pro Asn Trp 225 230 235 240

289779US0PCT.ST25 Ser Gln Arg Pro Asp Leu Ala Ala Asp Asn Pro Ile Asp Asp His His 245 250 255 Thr Met Tyr Thr Val His Phe Tyr Thr Gly Ser His Ala Ala Ser Thr 260 265 270 Glu Ser Tyr Pro Ser Glu Thr Pro Asn Ser Glu Arg Gly Asn Val Met 275 280 285 Ser Asn Thr Arg Tyr Ala Leu Glu Asn Gly Val Ala Val Phe Ala Thr 290 295 300 Glu Trp Gly Thr Ser Gln Ala Ser Gly Asp Gly Gly Pro Tyr Phe Asp 305 310 315 Glu Ala Asp Val Trp Ile Glu Phe Leu Asn Glu Asn Asn Ile Ser Trp 325 330 335 Ala Asn Trp Ser Leu Thr Asn Lys Asn Glu Val Ser Gly Ala Phe Thr 340 345 350 Pro Phe Glu Leu Gly Lys Ser Asn Ala Thr Asn Leu Asp Pro Gly Pro 355 360 365 Asp His Val Trp Ala Pro Glu Glu Leu Ser Leu Ser Gly Glu Tyr Val 370 375 380 Arg Ala Arg Ile Lys Gly Val Asn Tyr Glu Pro Ile Asp Arg Thr Lys 385 390 395 400 Tyr Thr Lys Val Leu Trp Asp Phe Asn Asp Gly Thr Lys Gln Gly Phe 405 410 415 Gly Val Asn Ser Asp Ser Pro Asn Lys Glu Leu Ile Ala Val Asp Asn 420 425 430 Glu Asn Asn Thr Leu Lys Val Ser Gly Leu Asp Val Ser Asn Asp Val 435 440 445 Ser Asp Gly Asn Phe Trp Ala Asn Ala Arg Leu Ser Ala Asn Gly Trp 450 460 Gly Lys Ser Val Asp Ile Leu Gly Ala Glu Lys Leu Thr Met Asp Val 465 470 475 480 Ile Val Asp Glu Pro Thr Thr Val Ala Ile Ala Ala Ile Pro Gln Ser 485 490 495 Ser Lys Ser Gly Trp Ala Asn Pro Glu Arg Ala Val Arg Val Asn Ala 500 505 510 289779USOPCT.ST25
Glu Asp Phe Val Gln Gln Thr Asp Gly Lys Tyr Lys Ala Gly Leu Thr
515 520 525 Ile Thr Gly Glu Asp Ala Pro Asn Leu Lys Asn Ile Ala Phe His Glu 530 540 Glu Asp Asn Asn Met Asn Asn Ile Ile Leu Phe Val Gly Thr Asp Ala 545 550 555 560 Ala Asp Val Ile Tyr Leu Asp Asn Ile Lys Val Ile Gly Thr Glu Val 565 570 575 Glu Ile Pro Val Val His Asp Pro Lys Gly Glu Ala Val Leu Pro Ser 580 585 590 Val Phe Glu Asp Gly Thr Arg Gln Gly Trp Asp Trp Ala Gly Glu Ser 595 600 605 Gly Val Lys Thr Ala Leu Thr Ile Glu Glu Ala Asn Gly Ser Asn Ala 610 615 620 Leu Ser Trp Glu Phe Gly Tyr Pro Glu Val Lys Pro Ser Asp Asn Trp 625 630 635 640 Ala Thr Ala Pro Arg Leu Asp Phe Trp Lys Ser Asp Leu Val Arg Gly 645 650 655 Glu Asn Asp Tyr Val Ala Phe Asp Phe Tyr Leu Asp Pro Val Arg Ala 660 665 670 Thr Glu Gly Ala Met Asn Ile Asn Leu Val Phe Gln Pro Pro Thr Asn 675 680 685 Gly Tyr Trp Val Gln Ala Pro Lys Thr Tyr Thr Ile Asn Phe Asp Glu 690 700 Leu Glu Glu Ala Asn Gln Val Asn Gly Leu Tyr His Tyr Glu Val Lys 705 710 715 720 Ile Asn Val Arg Asp Ile Thr Asn Ile Gln Asp Asp Thr Leu Leu Arg 725 730 735 Asn Met Met Ile Ile Phe Ala Asp Val Glu Ser Asp Phe Ala Gly Arg 740 745 750 Val Phe Val Asp Asn Val Arg Phe Glu Gly Ala Ala Thr Thr Glu Pro 755 760 765 Val Glu Pro Glu Pro Val Asp Pro Gly Glu Glu Thr Pro Pro Val Asp 770 780

Glu Lys Glu Ala Lys Lys Glu Gln Lys Glu Ala Glu Lys Glu Glu Lys 785 790 795 800

Glu Ala Val Lys Glu Glu Lys Lys Glu Ala Lys Glu Glu Lys Lys Ala 805 815

val Lys Asn Glu Ala Lys Lys Lys 820

<210>	3
<211>	3332

<212> DNA

Bacillus sp. KSM-64

<220> <221> <222> CDS (610)..(3075)

<220>

sig_peptide (610)..(696) <221> <222>

<400> 3						
agtacttacc	attttagagt	caaaagatag	aagccaagca	ggatttgccg	atgcaaccgg	60
cttatattta	gagggaattt	ctttttaaat	tgaatacgga	ataaaatcag	gtaaacaggt	120
cctgatttta	tttttttgaa	tttttttgag	aactaaagat	tgaaatagaa	gtagaagaca	180
acggacataa	gaaaattgta	ttagttttaa	ttatagaaaa	cgcttttcta	taattattta	240
tacctagaac	gaaaatactg	tttcgaaagc	ggtttactat	aaaaccttat	attccggctc	300
tttttttaaa	cagggggtga	aaattcactc	tagtattcta	atttcaacat	gctataataa	360
atttgtaaga	cgcaatatac	atctttttt	tatgatattt	gtaagcggtt	aaccttgtgc	420
tatatgccga	tttaggaagg	gggtagattg	agtcaagtag	tcataattta	gataacttat	480
aagttgttga	gaagcaggag	agaatctggg	ttactcacaa	gttttttaaa	acattatcga	540
aagcactttc	ggttatgctt	atgaatttag	ctatttgatt	caattacttt	aataatttta	600
ggaggtaat	atg atg tta Met Met Leu 1	aga aag aaa Arg Lys Lys 5	a aca aag ca s Thr Lys G	ag ttg att i ln Leu Ile : 10	tct tcc att Ser Ser Ile	651
ctt att tt Leu Ile Le	a gtt tta c u Val Leu Lo	eu Leu Ser I	Leu Phe Pro	aca gct ct Thr Ala Le	t gca gca u Ala Ala 30	699

20

gaa gga aac act cgt gaa gac aat ttt aaa cat tta tta ggt aat gac Glu Gly Asn Thr Arg Glu Asp Asn Phe Lys His Leu Leu Gly Asn Asp 35 40 45 747

aat gtt aaa cgc cct tct gag gct ggc gca tta caa tta caa gaa gtc Asn Val Lys Arg Pro Ser Glu Ala Gly Ala Leu Gln Leu Gln Glu Val 50 55 60 795

gat gga caa atg aca tta gta gat caa cat gga gaa aaa att caa tta 843 Asp Gly Gln Met Thr Leu Val Asp Gln His Gly Glu Lys Ile Gln Leu 65 70 75

cgt gga atg agt aca cac gga tta caa tgg ttt cct gag atc ttg aat 891 Page 8

Arg	G]y 80	Met	Ser	Thr	His	G]y 85	Leu		779us Trp				Ile	Leu	Asn	
gat Asp 95	aac Asn	gca Ala	tac Tyr	aaa Lys	gct Ala 100	ctt Leu	gct Ala	aac Asn	gat Asp	tgg Trp 105	gaa Glu	tca Ser	aat Asn	atg Met	att Ile 110	939
cgt Arg	cta Leu	gct Ala	atg Met	tat Tyr 115	gtc Val	ggt Gly	gaa Glu	aat Asn	ggc Gly 120	tat Tyr	gct Ala	tca Ser	aat Asn	cca Pro 125	gag Glu	987
tta Leu	att Ile	aaa Lys	agc ser 130	aga Arg	gtc Val	att Ile	aaa Lys	gga Gly 135	ata Ile	gat Asp	ctt Leu	gct Ala	att Ile 140	gaa Glu	aat Asn	1035
gac Asp	atg Met	tat Tyr 145	gtc Val	atc Ile	gtt Val	gat Asp	tgg Trp 150	cat His	gta Val	cat His	gca Ala	cct Pro 155	ggt Gly	gat Asp	cct Pro	1083
aga Arg	gat Asp 160	ccc Pro	gtt Val	tac Tyr	gct Ala	gga Gly 165	gca Ala	gaa Glu	gat Asp	ttc Phe	ttt Phe 170	aga Arg	gat Asp	att Ile	gca Ala	1131
gca Ala 175	tta Leu	tat Tyr	cct Pro	aac Asn	aat Asn 180	cca Pro	cac His	att Ile	att Ile	tat Tyr 185	gag Glu	tta Leu	gcg Ala	aat Asn	gag Glu 190	1179
cca Pro	agt Ser	agt Ser	aac Asn	aat Asn 195	aat Asn	ggt Gly	gga Gly	gct Ala	ggg Gly 200	att Ile	cca Pro	aat Asn	aat Asn	gaa Glu 205	gaa Glu	1227
ggt Gly	tgg Trp	aat Asn	gcg Ala 210	gta Val	aaa Lys	gaa Glu	tac Tyr	gct Ala 215	gat Asp	cca Pro	att Ile	gta Val	gaa Glu 220	atg Met	tta Leu	1275
cgt Arg	gat Asp	agc Ser 225	ggg Gly	aac Asn	gca Ala	gat Asp	gac Asp 230	aat Asn	att Ile	atc Ile	att Ile	gtg Val 235	ggt Gly	agt Ser	cca Pro	1323
aac Asn	tgg Trp 240	agt Ser	cag Gln	cgt Arg	cct Pro	gac Asp 245	tta Leu	gca Ala	gct Ala	gat Asp	aat Asn 250	cca Pro	att Ile	gat Asp	gat Asp	1371
cac His 255	cat His	aca Thr	atg Met	tat Tyr	act Thr 260	gtt Val	cac His	ttc Phe	tac Tyr	act Thr 265	ggt Gly	tca Ser	cat His	gct Ala	gct Ala 270	1419
tca Ser	act Thr	gaa Glu	agc Ser	tat Tyr 275	ccg Pro	cct Pro	gaa Glu	act Thr	cct Pro 280	aac Asn	tct Ser	gaa Glu	aga Arg	gga Gly 285	aac Asn	1467
gta Val	atg Met	agt Ser	aac Asn 290	act Thr	cgt Arg	tat Tyr	gcg Ala	tta Leu 295	gaa Glu	aac Asn	gga Gly	gta Val	gca Ala 300	gta Val	ttt Phe	1515
gca Ala	aca Thr	gag Glu 305	tgg Trp	gga Gly	act Thr	agc Ser	caa Gln 310	gca Ala	aat Asn	gga Gly	gat Asp	ggt Gly 315	ggt Gly	cct Pro	tac Tyr	1563
ttt Phe	gat Asp 320	gaa Glu	gca Ala	gat Asp	gta Val	tgg Trp 325	att Ile	gag Glu	ttt Phe	tta Leu	aat Asn 330	gaa Glu	aac Asn	aac Asn	att Ile	1611
agc Ser 335	tgg Trp	gct Ala	aac Asn	tgg Trp	tct Ser 340	tta Leu	acg Thr	aat Asn	aaa Lys	aat Asn 345	gaa Glu	gta Val	tct Ser	ggt Gly	gca Ala 350	1659
ttt	aca	cca	ttc	gag	tta	ggt	aag	tct		gca .ge 9		agt	ctt	gac	cca	1707

289779US0PCT.ST25 Phe Thr Pro Phe Glu Leu Gly Lys Ser Asn Ala Thr Ser Leu Asp Pro 355 360 365 ggg cca gac caa gta tgg gta cca gaa gag tta agt ctt tct gga gaa Gly Pro Asp Gln Val Trp Val Pro Glu Glu Leu Ser Leu Ser Gly Glu 1755 tat gta cgt gct cgt att aaa ggt gtg aac tat gag cca atc gac cgt Tyr Val Arg Ala Arg Ile Lys Gly Val Asn Tyr Glu Pro Ile Asp Arg 385 390 395 1803 aca aaa tac acg aaa gta ctt tgg gac ttt aat gat gga acg aag caa Thr Lys Tyr Thr Lys Val Leu Trp Asp Phe Asn Asp Gly Thr Lys Gln 1851 gga ttt gga gtg aat gga gat tct cca gtt gaa gat gta gtt att gag Gly Phe Gly Val Asn Gly Asp Ser Pro Val Glu Asp Val Val Ile Glu 415 420 425 430 1899 aat gaa gcg ggc gct tta aaa ctt tca gga tta gat gca agt aat gat Asn Glu Ala Gly Ala Leu Lys Leu Ser Gly Leu Asp Ala Ser Asn Asp 1947 gtt tct gaa ggt aat tac tgg gct aat gct cgt ctt tct gcc gac ggt Val Ser Glu Gly Asn Tyr Trp Ala Asn Ala Arg Leu Ser Ala Asp Gly 450 455 460 1995 tgg gga aaa agt gtt gat att tta ggt gct gaa aaa ctt act atg gat Trp Gly Lys Ser Val Asp Ile Leu Gly Ala Glu Lys Leu Thr Met Asp 465 470 2043 gtg att gtt gat gag ccg acc acg gta tca att gct gca att cca caa Val lle Val Asp Glu Pro Thr Thr Val Ser Ile Ala Ala Ile Pro Gln 2091 ggg cca tca gcc aat tgg gtt aat cca aat cgt gca att aag gtt gag Gly Pro Ser Ala Asn Trp Val Asn Pro Asn Arg Ala Ile Lys Val Glu 495 500 505 510 2139 cca act aat ttc gta ccg tta gga gat aag ttt aaa gcg gaa tta act Pro Thr Asn Phe Val Pro Leu Gly Asp Lys Phe Lys Ala Glu Leu Thr 515 520 5252187 2235 ata act tca gct gac tct cca tcg tta gaa gct att gcg atg cat gct Ile Thr Ser Ala Asp Ser Pro Ser Leu Glu Ala Ile Ala Met His Ala gaa aat aac aac atc aac atc att ctt ttt gta gga act gaa ggt Glu Asn Asn Asn Ile Asn Asn Ile Ile Leu Phe Val Gly Thr Glu Gly 545 550 555 2283 gct gat gtt atc tat tta gat aac att aaa gta att gga aca gaa gtt Ala Asp Val Ile Tyr Leu Asp Asn Ile Lys Val Ile Gly Thr Glu Val 560 565 570 2331 gaa att cca gtt gtt cat gat cca aaa gga gaa gct gtt ctt cct tct Glu Ile Pro Val Val His Asp Pro Lys Gly Glu Ala Val Leu Pro Ser 2379 gtt ttt gaa gac ggt aca cgt caa ggt tgg gac tgg gct gga gag tct Val Phe Glu Asp Gly Thr Arg Gln Gly Trp Asp Trp Ala Gly Glu Ser 595 600 605 2427 ggt gtg aaa aca gct tta aca att gaa gaa gca aac ggt tct aac gcg Gly Val Lys Thr Ala Leu Thr Ile Glu Glu Ala Asn Gly Ser Asn Ala 2475

tta tca tgg gaa ttt gga tac cca gaa gta aaa cct agt gat aac tgg

Page 10

2523

Leu	Ser	Trp 625	Glu	Phe	Glу	Tyr	Pro 630				Γ.ST2 Pro		Asp	Asn	Trp	
gca Ala	aca Thr 640	gct Ala	cca Pro	cgt Arg	tta Leu	gat Asp 645	ttc Phe	tgg Trp	aaa Lys	tct Ser	gac Asp 650	ttg Leu	gtt Val	cgc Arg	ggt Gly	2571
gaa Glu 655	aat Asn	gat Asp	tat Tyr	gta Val	act Thr 660	ttt Phe	gat Asp	ttc Phe	tat Tyr	cta Leu 665	gat Asp	cca Pro	gtt Val	cgt Arg	gca Ala 670	2619
aca Thr	gaa Glu	ggc Gly	gca Ala	atg Met 675	aat Asn	atc Ile	aat Asn	tta Leu	gta Val 680	ttc Phe	cag Gln	cca Pro	cct Pro	act Thr 685	aac Asn	2667
ggg Gly	tat Tyr	tgg Trp	gta Val 690	caa Gln	gca Ala	cca Pro	aaa Lys	acg Thr 695	tat Tyr	acg Thr	att Ile	aac Asn	ttt Phe 700	gat Asp	gaa Glu	2715
tta Leu	gag Glu	gaa Glu 705	gcg Ala	aat Asn	caa Gln	gta Val	aat Asn 710	ggt Gly	tta Leu	tat Tyr	cac His	tat Tyr 715	gaa Glu	gtg Val	aaa Lys	2763
att Ile	aac Asn 720	gta Val	aga Arg	gat Asp	att Ile	aca Thr 725	aac Asn	att Ile	caa Gln	gat Asp	gac Asp 730	acg Thr	tta Leu	cta Leu	cgt Arg	2811
aac Asn 735	atg Met	atg Met	atc Ile	att Ile	ttt Phe 740	gca Ala	gat Asp	gta Val	gaa Glu	agt Ser 745	gac Asp	ttt Phe	gca Ala	ggg Gly	aga Arg 750	2859
gtc Val	ttt Phe	gta Val	gat Asp	aat Asn 755	gtt Val	cgt Arg	ttt Phe	gag Glu	ggg Gly 760	gct Ala	gct Ala	act Thr	act Thr	gag Glu 765	ccg Pro	2907
gtt Val	gaa Glu	cca Pro	gag Glu 770	cca Pro	gtt Val	gat Asp	cct Pro	ggc Gly 775	gaa Glu	gag Glu	acg Thr	ccg Pro	cct Pro 780	gtc Val	gat Asp	2955
gag Glu	aag Lys	gaa Glu 785	gcg Ala	aaa Lys	aaa Lys	gaa Glu	caa Gln 790	aaa Lys	gaa Glu	gca Ala	gag Glu	aaa Lys 795	gaa Glu	gag Glu	aaa Lys	3003
gaa Glu	gca Ala 800	gta Val	aaa Lys	gaa Glu	gaa Glu	aag Lys 805	aaa Lys	gaa Glu	gct Ala	aaa Lys	gaa Glu 810	gaa Glu	aag Lys	aaa Lys	gca Ala	3051
atc Ile 815	aaa Lys	aat Asn	gag Glu	gct Ala	acg Thr 820	aaa Lys	aaa Lys	taa	tcta	ata :	aact	agtt	at a	gggt	tatct	3105
aaa	ggtc	tga '	tgca	gatc	tt t	taga [.]	taac	c tt	tttt	tgca	taa	ctgg	aca	taga	atggtt	3165
att	aaag	aaa (gcaa	ggtg [.]	tt ta	atac	gata	t ta	aaaa	ggta	gcg	attt	taa	attg	aaacct	3225
															gaaaac	3285
gga	aatt	tct	agta	gaag	aa a	aaca	gacc	a ag	aaat	actg	caa	gctt				3332
- 21	0~	4														

<210> <211> <212> <213> 4 822 PRT

<400> 4

Met Met Leu Arg Lys Lys Thr Lys Gln Leu Ile Ser Ser Ile Leu Ile Page 11

Bacillus sp. KSM-64

1

15

Leu Val Leu Leu Leu Ser Leu Phe Pro Thr Ala Leu Ala Ala Glu Gly 20 25 30 Asn Thr Arg Glu Asp Asn Phe Lys His Leu Leu Gly Asn Asp Asn Val Lys Arg Pro Ser Glu Ala Gly Ala Leu Gln Leu Gln Glu Val Asp Gly 50 60 Gln Met Thr Leu Val Asp Gln His Gly Glu Lys Ile Gln Leu Arg Gly 65 70 75 80 Met Ser Thr His Gly Leu Gln Trp Phe Pro Glu Ile Leu Asn Asp Asn 85 90 95 Ala Tyr Lys Ala Leu Ala Asn Asp Trp Glu Ser Asn Met Ile Arg Leu 100 105 110 Ala Met Tyr Val Gly Glu Asn Gly Tyr Ala Ser Asn Pro Glu Leu Ile 115 125 Lys Ser Arg Val Ile Lys Gly Ile Asp Leu Ala Ile Glu Asn Asp Met 130 140 Tyr Val Ile Val Asp Trp His Val His Ala Pro Gly Asp Pro Arg Asp 145 150 155 160 Pro Val Tyr Ala Gly Ala Glu Asp Phe Phe Arg Asp Ile Ala Ala Leu 165 170 175 Tyr Pro Asn Asn Pro His Ile Ile Tyr Glu Leu Ala Asn Glu Pro Ser 180 185 190 Ser Asn Asn Gly Gly Ala Gly Ile Pro Asn Asn Glu Glu Gly Trp 195 200 205 Asn Ala Val Lys Glu Tyr Ala Asp Pro Ile Val Glu Met Leu Arg Asp 210 215 220 Ser Gly Asn Ala Asp Asp Asn Ile Ile Ile Val Gly Ser Pro Asn Trp 225 230 235 240 Ser Gln Arg Pro Asp Leu Ala Ala Asp Asn Pro Ile Asp Asp His His 245 250 255 Thr Met Tyr Thr Val His Phe Tyr Thr Gly Ser His Ala Ala Ser Thr 260 265 270 Glu Ser Tyr Pro Pro Glu Thr Pro Asn Ser Glu Arg Gly Asn Val Met

Ser Asn Thr Arg Tyr Ala Leu Glu Asn Gly Val Ala Val Phe Ala Thr 290 295 300 Glu Trp Gly Thr Ser Gln Ala Asn Gly Asp Gly Gly Pro Tyr Phe Asp 305 310 315 Glu Ala Asp Val Trp Ile Glu Phe Leu Asn Glu Asn Asn Ile Ser Trp 325 330 335 Ala Asn Trp Ser Leu Thr Asn Lys Asn Glu Val Ser Gly Ala Phe Thr 340 345 350 Pro Phe Glu Leu Gly Lys Ser Asn Ala Thr Ser Leu Asp Pro Gly Pro 355 360 365 Asp Gln Val Trp Val Pro Glu Glu Leu Ser Leu Ser Gly Glu Tyr Val 370 375 380 Arg Ala Arg Ile Lys Gly Val Asn Tyr Glu Pro Ile Asp Arg Thr Lys 385 390 395 400 Tyr Thr Lys Val Leu Trp Asp Phe Asn Asp Gly Thr Lys Gln Gly Phe 405 410 415 Gly Val Asn Gly Asp Ser Pro Val Glu Asp Val Val Ile Glu Asn Glu 420 425 430 Ala Gly Ala Leu Lys Leu Ser Gly Leu Asp Ala Ser Asn Asp Val Ser 435 440 445 Glu Gly Asn Tyr Trp Ala Asn Ala Arg Leu Ser Ala Asp Gly Trp Gly 450 460 Lys Ser Val Asp Ile Leu Gly Ala Glu Lys Leu Thr Met Asp Val Ile 465 470 475 480 Val Asp Glu Pro Thr Thr Val Ser Ile Ala Ala Ile Pro Gln Gly Pro 485 490 495 Ser Ala Asn Trp Val Asn Pro Asn Arg Ala Ile Lys Val Glu Pro Thr 500 505 510 Asn Phe Val Pro Leu Gly Asp Lys Phe Lys Ala Glu Leu Thr Ile Thr 515 520 525 Ser Ala Asp Ser Pro Ser Leu Glu Ala Ile Ala Met His Ala Glu Asn 530 535 540 Asn Asn Ile Asn Asn Ile Ile Leu Phe Val Gly Thr Glu Gly Ala Asp

Asn Glu Ala Thr Lys Lys

Val Ile Tyr Leu Asp Asn Ile Lys Val Ile Gly Thr Glu Val Glu Ile 565 570 575 Pro Val Val His Asp Pro Lys Gly Glu Ala Val Leu Pro Ser Val Phe 580 585 Glu Asp Gly Thr Arg Gln Gly Trp Asp Trp Ala Gly Glu Ser Gly Val 595 600 Lys Thr Ala Leu Thr Ile Glu Glu Ala Asn Gly Ser Asn Ala Leu Ser 610 620 Trp Glu Phe Gly Tyr Pro Glu Val Lys Pro Ser Asp Asn Trp Ala Thr 625 630 635 640 Ala Pro Arg Leu Asp Phe Trp Lys Ser Asp Leu Val Arg Gly Glu Asn 645 650 655 Asp Tyr Val Thr Phe Asp Phe Tyr Leu Asp Pro Val Arg Ala Thr Glu 660 665 670 Gly Ala Met Asn Ile Asn Leu Val Phe Gln Pro Pro Thr Asn Gly Tyr 675 680 685 Trp Val Gln Ala Pro Lys Thr Tyr Thr Ile Asn Phe Asp Glu Leu Glu 690 695 700 Glu Ala Asn Gln Val Asn Gly Leu Tyr His Tyr Glu Val Lys Ile Asn 705 710 715 720 Val Arg Asp Ile Thr Asn Ile Gln Asp Asp Thr Leu Leu Arg Asn Met 725 730 735 Met Ile Ile Phe Ala Asp Val Glu Ser Asp Phe Ala Gly Arg Val Phe 740 745 750 Val Asp Asn Val Arg Phe Glu Gly Ala Ala Thr Thr Glu Pro Val Glu 755 760 765 Pro Glu Pro Val Asp Pro Gly Glu Glu Thr Pro Pro Val Asp Glu Lys
770 775 780 Glu Ala Lys Lys Glu Gln Lys Glu Ala Glu Lys Glu Glu Lys Glu Ala 785 790 795 800 Val Lys Glu Glu Lys Lys Glu Ala Lys Glu Glu Lys Lys Ala Ile Lys 805 810 815

820

```
5
<210>
         2343
<211>
<212>
         DNA
         Bacillus sp. pHSP-K38
<220>
<221>
<222>
         CDS
         (580)..(2067)
<220>
         sig_peptide (580)..(627)
<221>
<222>
<400>
agatctagca ggatttgccg atgcaaccgg cttatattta gagggaattt ctttttaaat
                                                                                                  60
tgaatacgga ataaaatcag gtaaacaggt cctgatttta tttttttgaa tttttttgag
                                                                                                 120
aactaaagat tgaaatagaa gtagaagaca acggacataa gaaaattgta ttagttttaa
                                                                                                 180
ttatagaaaa cgcttttcta taattattta tacctagaac gaaaatactg tttcgaaagc
                                                                                                 240
                                                                                                 300
ggtttactat aaaaccttat attccggctc tttttttaaa cagggggtga aaattcactc
tagtattcta atttcaacat gctataataa atttgtaaga cgcaatatac atctttttt
                                                                                                 360
                                                                                                 420
tatgatattt gtaagcggtt aaccttgtgc tatatgccga tttaggaagg gggtagattg
agtcaagtag tcataattta gataacttat aagttgttga gaagcaggag agaatctggg
                                                                                                 480
ttactcacaa gttttttaaa acattatcga aagcactttc ggttatgctt atgaatttag
                                                                                                 540
                                                                                                 594
ctatttgatt caattacttt aataatttta ggaggtaat atg atg tta aga aag
                                                            Met Met Leu Arg Lys
aaa aca aag cag ttg ggt cga cca gca caa gcc gat gga ttg aac ggt
Lys Thr Lys Gln Leu Gly Arg Pro Ala Gln Ala Asp Gly Leu Asn Gly
                                                                                                 642
acg atg atg cag tat tat gag tgg cat ttg gaa aac gac ggg cag cat
Thr Met Met Gln Tyr Tyr Glu Trp His Leu Glu Asn Asp Gly Gln His
                                                                                                 690
tgg aat cgg ttg cac gat gat gcc gca gct ttg agt gat gct ggt att
Trp Asn Arg Leu His Asp Asp Ala Ala Ala Leu Ser Asp Ala Gly Ile
                                                                                                 738
aca gct att tgg att ccg cca gcc tac aaa ggt aat agt cag gcg gat
Thr Ala Ile Trp Ile Pro Pro Ala Tyr Lys Gly Asn Ser Gln Ala Asp
                                                                                                 786
gtt ggg tac ggt gca tac gat ctt tat gat tta gga gag ttc aat caa
Val Gly Tyr Gly Ala Tyr Asp Leu Tyr Asp Leu Gly Glu Phe Asn Gln
70 75 80 85
                                                                                                 834
    ggt act gtt cga acg aaa tac gga act aag gca cag ctt gaa cga Gly Thr Val Arg Thr Lys Tyr Gly Thr Lys Ala Gln Leu Glu Arg
                                                                                                 882
gct att ggg tcc ctt aaa tct aat gat atc aat gta tac gga gat gtc
Ala Ile Gly Ser Leu Lys Ser Asn Asp Ile Asn Val Tyr Gly Asp Val
105 110
                                                                                                 930
```

Page 15

										50PCT						
gtg Val	atg Met	aat Asn 120	cat His	aaa Lys	atg Met	gga Gly	gct Ala 125	gat Asp	Phe	acg Thr	gag Glu	gca Ala 130	gtg Val	caa Gln	gct Ala	978
gtt Val	caa Gln 135	gta Val	aat Asn	cca Pro	acg Thr	aat Asn 140	cgt Arg	tgg Trp	cag Gln	gat Asp	att Ile 145	tca Ser	ggt Gly	gcc Ala	tac Tyr	1026
acg Thr 150	att Ile	gat Asp	gcg Ala	tgg Trp	acg Thr 155	ggt Gly	ttc Phe	gac Asp	ttt Phe	tca Ser 160	ggg Gly	cgt Arg	aac Asn	aac Asn	gcc Ala 165	1074
tat Tyr	tca Ser	gat Asp	ttt Phe	aag Lys 170	tgg Trp	aga Arg	tgg Trp	ttc Phe	cat His 175	ttt Phe	aat Asn	ggt Gly	gtt Val	gac Asp 180	tgg Trp	1122
gat Asp	cag Gln	cgc Arg	tat Tyr 185	caa Gln	gaa Glu	aat Asn	cat His	att Ile 190	ttc Phe	cgc Arg	ttt Phe	gca Ala	aat Asn 195	acg Thr	aac Asn	1170
tgg Trp	aac Asn	tgg Trp 200	cga Arg	gtg Val	gat Asp	gaa Glu	gag Glu 205	aac Asn	ggt Gly	aat Asn	tat Tyr	gat Asp 210	tac Tyr	ctg Leu	tta Leu	1218
gga Gly	tcg Ser 215	aat Asn	atc Ile	gac Asp	ttt Phe	agt Ser 220	cat His	cca Pro	gaa Glu	gta Val	caa Gln 225	gat Asp	gag Glu	ttg Leu	aag Lys	1266
gat Asp 230	tgg Trp	ggt Gly	agc Ser	tgg Trp	ttt Phe 235	acc Thr	gat Asp	gag Glu	tta Leu	gat Asp 240	ttg Leu	gat Asp	ggt Gly	tat Tyr	cgt Arg 245	1314
tta Leu	gat Asp	gct Ala	att Ile	aaa Lys 250	cat His	att Ile	cca Pro	ttc Phe	tgg Trp 255	tat Tyr	aca Thr	tct Ser	gat Asp	tgg Trp 260	gtt Val	1362
cgg Arg	cat His	cag Gln	cgc Arg 265	aac Asn	gaa Glu	gca Ala	gat Asp	caa Gln 270	gat Asp	tta Leu	ttt Phe	gtc Val	gta Val 275	ggg Gly	gaa Glu	1410
tat Tyr	tgg Trp	aag Lys 280	gat Asp	gac Asp	gta Val	ggt Gly	gct Ala 285	ctc Leu	gaa Glu	ttt Phe	tat Tyr	tta Leu 290	gat Asp	gaa Glu	atg Met	1458
aat Asn	tgg Trp 295	gag Glu	atg Met	tct Ser	cta Leu	ttc Phe 300	gat Asp	gtt Val	cca Pro	ctt Leu	aat Asn 305	tat Tyr	aat Asn	ttt Phe	tac Tyr	1506
cgg Arg 310	gct Ala	tca Ser	caa Gln	caa Gln	ggt Gly 315	gga Gly	agc Ser	tat Tyr	gat Asp	atg Met 320	cgt Arg	aat Asn	att Ile	tta Leu	cga Arg 325	1554
gga Gly	tct Ser	tta Leu	gta Val	gaa Glu 330	gcg Ala	cat His	ccg Pro	atg Met	cat His 335	gca Ala	gtt Val	acg Thr	ttt Phe	gtt Val 340	gat Asp	1602
aat Asn	cat His	gat Asp	act Thr 345	cag Gln	cca Pro	ggg Gly	gag Glu	tca Ser 350	tta Leu	gag Glu	tca Ser	tgg Trp	gtt Val 355	gct Ala	gat Asp	1650
tgg Trp	ttt Phe	aag Lys 360	cca Pro	ctt Leu	gct Ala	tat Tyr	gcg Ala 365	aca Thr	att Ile	ttg Leu	acg Thr	cgt Arg 370	gaa Glu	ggt Gly	ggt Gly	1698
tat Tyr	cca Pro 375	aat Asn	gta Val	ttt Phe	tac Tyr	ggt Gly 380	gat Asp	tac Tyr	tat Tyr	ggg Gly	att Ile 385	cct Pro	aac Asn	gat Asp	aac Asn	1746

att tca gct aaa aaa gat atg att gat gag ctg ctt gat gca cgt caa Ile Ser Ala Lys Lys Asp Met Ile Asp Glu Leu Leu Asp Ala Arg Gln 390 395 400 405	1794
aat tac gca tat ggc acg cag cat gac tat ttt gat cat tgg gat gtt Asn Tyr Ala Tyr Gly Thr Gln His Asp Tyr Phe Asp His Trp Asp Val 410 415 420	1842
gta gga tgg act agg gaa gga tct tcc tcc aga cct aat tca ggc ctt Val Gly Trp Thr Arg Glu Gly Ser Ser Ser Arg Pro Asn Ser Gly Leu 425 430 435	1890
gcg act att atg tcg aat gga cct ggt ggt tcc aag tgg atg tat gta Ala Thr Ile Met Ser Asn Gly Pro Gly Gly Ser Lys Trp Met Tyr Val 440 445 450	1938
gga cgt cag aat gca gga caa aca tgg aca gat tta act ggt aat aac Gly Arg Gln Asn Ala Gly Gln Thr Trp Thr Asp Leu Thr Gly Asn Asn 455 460 465	1986
gga gcg tcc gtt aca att aat ggc gat gga tgg ggc gaa ttc ttt acg Gly Ala Ser Val Thr Ile Asn Gly Asp Gly Trp Gly Glu Phe Phe Thr 470 475 480 485	2034
aat gga gga tct gta tcc gtg tac gtg aac caa taacaaaaag ccttgagaag Asn Gly Gly Ser Val Ser Val Tyr Val Asn Gln 490 495	2087
ggattcctcc ctaactcaag gctttcttta tgtcgcttag ctttacgctt ctacgacttt	2147
gaagcttggg gatccgtcga gacaaggtaa aggataaaac agcacaattc caagaaaaac	2207
acgatttaga acctaaaaag aacgaatttg aactaactca taaccgagag gtaaaaaaag	2267
aacgaagtcg agatcaggga atgagtttat aaaataaaaa aagcacctga aaaggtgtct	2327
tttttgatg tctaga	2343
<210> 6 <211> 496 <212> PRT	
<213> Bacillus sp. pHSP-K38	
<213> Bacillus sp. pHSP-K38 <400> 6	
<213> Bacillus sp. pHSP-K38	
<213> Bacillus sp. pHSP-K38 <400> 6	
<pre><213> Bacillus sp. pHSP-K38 <400> 6 Met Met Leu Arg Lys Lys Thr Lys Gln Leu Gly Arg Pro Ala Gln Ala 1</pre>	
<pre><213> Bacillus sp. pHSP-K38 <400> 6 Met Met Leu Arg Lys Lys Thr Lys Gln Leu Gly Arg Pro Ala Gln Ala 1</pre>	
<pre> <213> Bacillus sp. pHSP-K38 <400> 6 Met Met Leu Arg Lys Lys Thr Lys Gln Leu Gly Arg Pro Ala Gln Ala 15 Asp Gly Leu Asn Gly Thr Met Met Gln Tyr Tyr Glu Trp His Leu Glu 20 Asn Asp Gly Gln His Trp Asn Arg Leu His Asp Asp Ala Ala Ala Leu 45 Ser Asp Ala Gly Ile Thr Ala Ile Trp Ile Pro Pro Ala Tyr Lys Gly</pre>	

Ala Gln Leu Glu Arg Ala Ile Gly Ser Leu Lys Ser Asn Asp Ile Asn 100 105 110Val Tyr Gly Asp Val Val Met Asn His Lys Met Gly Ala Asp Phe Thr 115 120 125 Glu Ala Val Gln Ala Val Gln Val Asn Pro Thr Asn Arg Trp Gln Asp 130 135 140 Ile Ser Gly Ala Tyr Thr Ile Asp Ala Trp Thr Gly Phe Asp Phe Ser 145 150 155 160 Gly Arg Asn Asn Ala Tyr Ser Asp Phe Lys Trp Arg Trp Phe His Phe 165 170 175 Asn Gly Val Asp Trp Asp Gln Arg Tyr Gln Glu Asn His Ile Phe Arg 180 185 190 Phe Ala Asn Thr Asn Trp Asn Trp Arg Val Asp Glu Glu Asn Gly Asn 195 200 205 Tyr Asp Tyr Leu Leu Gly Ser Asn Ile Asp Phe Ser His Pro Glu Val 210 215 220 Gln Asp Glu Leu Lys Asp Trp Gly Ser Trp Phe Thr Asp Glu Leu Asp 225 230 235 Leu Asp Gly Tyr Arg Leu Asp Ala Ile Lys His Ile Pro Phe Trp Tyr 245 250 255 Thr Ser Asp Trp Val Arg His Gln Arg Asn Glu Ala Asp Gln Asp Leu 260 265 270 Phe Val Val Gly Glu Tyr Trp Lys Asp Asp Val Gly Ala Leu Glu Phe 275 280 285 Tyr Leu Asp Glu Met Asn Trp Glu Met Ser Leu Phe Asp Val Pro Leu 290 295 300 Asn Tyr Asn Phe Tyr Arg Ala Ser Gln Gln Gly Gly Ser Tyr Asp Met 305 310 315 Arg Asn Ile Leu Arg Gly Ser Leu Val Glu Ala His Pro Met His Ala 325 330 335 val Thr Phe Val Asp Asn His Asp Thr Gln Pro Gly Glu Ser Leu Glu 340 345 350 Ser Trp Val Ala Asp Trp Phe Lys Pro Leu Ala Tyr Ala Thr Ile Leu 355 360 365 Page 18

Thr Arg Glu Gly Gly Tyr Pro Asn Val Phe Tyr Gly Asp Tyr Tyr Gly 370 380	
Ile Pro Asn Asp Asn Ile Ser Ala Lys Lys Asp Met Ile Asp Glu Leu 385 390 395 400	
Leu Asp Ala Arg Gln Asn Tyr Ala Tyr Gly Thr Gln His Asp Tyr Phe 405 410 415	
Asp His Trp Asp Val Val Gly Trp Thr Arg Glu Gly Ser Ser Ser Arg 420 425 430	
Pro Asn Ser Gly Leu Ala Thr Ile Met Ser Asn Gly Pro Gly Gly Ser 435 440 445	
Lys Trp Met Tyr Val Gly Arg Gln Asn Ala Gly Gln Thr Trp Thr Asp 450 455 460	
Leu Thr Gly Asn Asn Gly Ala Ser Val Thr Ile Asn Gly Asp Gly Trp 465 470 475 480	
Gly Glu Phe Phe Thr Asn Gly Gly Ser Val Ser Val Tyr Val Asn Gln 485 490 495	
<210> 7 <211> 22 <212> DNA <213> Artificial	
<220> <223> Synthetic DNA	
<400> 7 aaggatgata atccgtcccg tg	22
<210> 8 <211> 38 <212> DNA <213> Artificial	
<220> <223> Synthetic DNA	
<400> 8 gttatccgct cacaattcgg atggtcatca atcactag	38
<210> 9 <211> 38 <212> DNA <213> Artificial	
<220> <223> Synthetic DNA	
<400> 9 cgtcgtgact gggaaaactg cgaaatcaga cggtgtac Page 19	38

<210> <211> <212> <213>	10 20 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> cgtcgc	10 ctat cggcgggcac	20
<210> <211> <212> <213>	11 25 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> atgtat	11 atag gaggttggtg gtatg	25
<210> <211> <212> <213>	12 38 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> gttatc	12 cgct cacaattcgc tctgacatgt caacctcc	38
<210> <211> <212> <213>	13 38 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> cgtcgt	13 gact gggaaaacag atgagaaagg aggagaag	38
<210> <211> <212> <213>	14 23 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> ataact	14 gtta ctatataatg gcc	23
<210> <211> <212> <213>	15 20 DNA Artificial	
<220>		

Page 20

<223>	Synthetic DNA			
<400> gctgggg	15 gatg acgaatccga			20
<210> <211> <212> <213>	16 38 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> gttatco	16 cgct cacaattctc	accttcatta	tggaccac	38
<210> <211> <212> <213>	17 38 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> cgtcgt	17 gact gggaaaacca	ccgtctcgac	aaattccg	38
<210> <211> <212> <213>	18 20 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> gttgcc	18 aagc gcgatatagg			20
<210> <211> <212> <213>	19 25 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> tataca	19 ggga ttatcagtat	tgagc		25
<210> <211> <212> <213>				
<220> <223>	Synthetic DNA			
<400> gttatc	20 cgct cacaattctt	ttctccttgt	tggatctg	38
<210> <211>	21 38			

<212> <213>	DNA Artificial	•				
<220> <223>	Synthetic DNA					
<400> cgtcgtg	21 gact gggaaaacgg	ggataacgat	ttatgaag			38
<210> <211> <212> <213>	22 30 DNA Artificial					
<220> <223>	Synthetic DNA					
<400> ttttgta	22 aata atgatatgaa	gctagtgttg				30
<210> <211> <212> <213>	23 20 DNA Artificial					
<220> <223>	Synthetic DNA					
<400> atatcc	23 agcc ctgcctcttc					20
<210> <211> <212> <213>	24 58 DNA Artificial					
<220> <223>	Synthetic DNA					
<400> ctgtgt	24 gaaa ttgttatccg	ctcacaattc	gaaatttcct	cctaaagcga	tcataacg	58
<210> <211> <212> <213>	25 51 DNA Artificial					
<220> <223>	Synthetic DNA					
<400> gtcgtt	25 ttac aacgtcgttg	actgggaaaa	cccacaagct	gctaacgtta	С	51
<210> <211> <212> <213>	26 20 DNA Artificial					
<220> <223>	Synthetic DNA					
<400> tcctgt	26 ttgg gctcctgttg			3		20

<210> <211> <212> <213>	27 26 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> tgttta	27 tgta tggcggcctg	cgggac			26
<210> <211> <212> <213>	28 38 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> gttatc	28 cgct cacaattcag	ctttccatat	atctcacc		38
<210> <211> <212> <213>	29 38 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> cgtcgt	29 gact gggaaaacac	ggtctgctga	tgactgac		38
<210> <211> <212> <213>	30 20 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> gcgttt	30 actt aagatgtcga				20
<210> <211> <212> <213>	31 29 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> tttcta	31 gcgt ttcggcaaat	tgagttaag			29
<210> <211> <212> <213>	32 38 DNA Artificial				
<220>					

			20377303012123	
<223>	Synthetic DNA	•		
<400> gttatco	32 cgct cacaattcct	tactttcata	cggctcac	38
<210> <211> <212> <213>	33 38 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> cgtcgtg	33 gact gggaaaacga	gacgtggcgc	tcaccaac	38
<210> <211> <212> <213>	34 29 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> cggatta	34 aaaa aaagaatatc	gcggacagc		29
<210> <211> <212> <213>	35 20 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> tgccgc	35 tgcc cgccggagag			20
<210> <211> <212> <213>	DNA			
<220> <223>	Synthetic DNA			
<400> gttatc	36 cgct cacaattcaa	ggtgtagaac	ttccgttg	38
<210> <211> <212> <213>	DNA			
<220> <223>	Synthetic DNA			
<400> cgtcgt	37 gact gggaaaacac	catcaacagc	ccctacac	38
<210> <211>	38 24		- 24	

		•	209//9030PC1.3123	
<212> <213>	DNA Artificial			
<220> <223>	Synthetic DNA			
<400> tcaaata	38 aaag gcggcattca	gtcc	2	24
<210> <211> <212> <213>	39 22 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> ataatg	39 gtat ccaaatccac	gc	2	22
<210> <211> <212> <213>	40 38 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> gttatc	40 cgct cacaattcat	tcagtcatat	gtatcacc	38
<210> <211> <212> <213>	41 38 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> cgtcgt	41 gact gggaaaacga	tccatcatac	acagcatg	38
<210> <211> <212> <213>	42 28 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> cacttc	42 tcaa cggaggggat	ttcacatc		28
<210> <211> <212> <213>	43 20 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> taatgg	43 agga gagaaggccg		Davis 25	20

<210> <211> <212> <213>	44 38 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> gttatc	44 cgct cacaattcag tcgcccatga agcatgag	38
<210> <211> <212> <213>	45 42 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> cgtcgt	45 gact gggaaaacac caaaaaatgc tgagctgaca gc	42
<210> <211> <212> <213>	46 26 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> ttgcca	46 atga tgaggaaaaa ggaacc	26
<210> <211> <212> <213>	47 26 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> ctgaac	47 gtct tgaataaaaa agcagg	26
<210> <211> <212> <213>	48 38 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> gttatc	48 cgct cacaattcgc tgaagtttca tatccatc	38
<210> <211> <212> <213>	49 38 DNA Artificial	
<220>		

Page 26

<223>	Synthetic DNA	-		
<400> cgtcgtg	49 gact gggaaaacat	tccgtcatcg	gcagcgag	38
<210> <211> <212> <213>	50 20 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> agcggt1	50 ttac aagttggagg			20
<210> <211> <212> <213>	51 22 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> atttca	51 gaag gcatacttca	ag		22
<210> <211> <212> <213>	52 38 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> gttatc	52 cgct cacaattcca	tacttggtgt	tgtcatcg	38
<210> <211> <212> <213>	53 40 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> cgtcgt	53 gact gggaaaacca	taatcagtaa	aaaggcggtc	40
<210> <211> <212> <213>	54 20 DNA Artificial		**	
<220> <223>	Synthetic DNA			
<400> ttctga	54 ccgc tctggcaacc			20
<210> <211>	55 20			

<212>	DNA	
<213>	Artificial	
<220> <223>	Synthetic DNA	
<400> ataatg	55 cccg cttcccaacc	20
<210> <211> <212> <213>	56 38 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> gttatc	56 cgct cacaattccg atcctcagct cctttgtc	38
<210> <211> <212> <213>	57 38 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> cgtcgt	57 gact gggaaaactc atctgatacc gattaacc	38
<210> <211> <212> <213>	58 20 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> caactg	58 aatc cgaaggaatg	20
<210> <211> <212> <213>	59 20 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> tcgggg	59 tcat gccgagcggt	20
<210> <211> <212> <213>	60 38 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> gttato	60 cgct cacaattcca atgttgccat tttcatcc	38

<210> <211> <212> <213>	61 38 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> cgtcgtg	61 gact gggaaaactt gtacgagaat caacgctg	38
<210> <211> <212> <213>	62 20 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> cacggc	62 aatg cattcttcgg	20
<210> <211> <212> <213>	63 21 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> agatct	63 gtcg gccaggttta c	21
<210> <211> <212> <213>	38 DNA	
<220> <223>	Synthetic DNA	
<400> gttatc	64 cgct cacaattctg atttttctgt catgtctc	38
<210> <211> <212> <213>	65 38 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> cgtcgt	65 gact gggaaaacgg tagagatgtg caccgaaa	38
<210> <211> <212> <213>	66 20 DNA Artificial	
<220>	- 20	

Page 29

<223>	Synthetic DNA			
<400> gagtcag	66 gacg gcatcgatga			20
<210> <211> <212> <213>	67 23 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> ttctga	67 ttca ttttcactgc 1	tgg		23
<210> <211> <212> <213>	68 38 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> gttatc	68 cgct cacaattcaa (cggataattc	ttccaatc	38
<210> <211> <212> <213>	69 37 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> cgtcgt	69 gact gggaaaactg	tccatgaagt	caaatcc	37
<210> <211> <212> <213>	70 20 DNA Artificial			
<220> <223>	Synthetic DNA			
	70 aata ttctctcgca			20
<210> <211> <212> <213>				
<220> <223>	Synthetic DNA			
<400> cgccgc	71 tttc accgcggatt	С		21
<210> <211>	72 38			

		-	031130301	C 1 8 O 1	
<212> <213>	DNA Artificial				
<220> <223>	Synthetic DNA				
<400> gttatco	72 cgct cacaattcct ttg	gaccactg	tatgaacc		38
<210> <211> <212> <213>	73 38 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> cgtcgt	73 gact gggaaaacac tcg	gtctaacg	aataatcc		38
<210> <211> <212> <213>					
<220> <223>	Synthetic DNA				
<400> tgtcat	74 cacg gaatttgacg				20
<210> <211> <212> <213>	75 30 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> ccaaat	75 tatc ctttgtgagc gcg	ggaatcag			30
<210> <211> <212> <213>	76 38 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> gttatc	76 cgct cacaattccg ta	gatcgtaa	tattgctc		38
<210> <211> <212> <213>	DNA				
<220> <223>	Synthetic DNA				
<400> cgtcgt	77 gact gggaaaacag ct	tagaaagt	caaccaag Page	31	38

<210> <211> <212> <213>	78 20 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> tttgag	78 catc agcacaagcc	20
<210> <211> <212> <213>	79 21 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> tgtagc	79 agaa gcagtcgaat t	21
<210> <211> <212> <213>	80 40 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> ctaatg	80 ggtg ctttagttga caattacgca gctgtcatgt	40
<210> <211> <212> <213>	81 41 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> ctgccc	81 cgtt agttgaagaa ctgataaacc gtgaaaaagt g	41
<210> <211> <212> <213>	82 20 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> cctttg	82 aaaa aggctcccgt	20
<210> <211> <212> <213>	83 29 DNA Artificial	
<220>		

<223>	Synthetic DNA	•		
<400> gttttc	83 caag tctgccgata	aaaatatgc		29
<210> <211> <212> <213>				
<220> <223>	Synthetic DNA			
<400> gttatc	84 cgct cacaattcat	gcttcatgta	cctacacc	38
<210> <211> <212> <213>	85 38 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> cgtcgt	85 gact gggaaaacca	attaacgatt	cgcatacc	38
<210> <211> <212> <213>	86 30 DNA Artificial			
<220> <223>	Synthetic DNA			
<400> aaaaag	86 aaga agtcacagta	cagaacgtgg		30
<210> <211> <212> <213>	DNA			
<220> <223>	Synthetic DNA			
<400> attttt	87 cgcc atcttgaatt	ttc		23
<210> <211> <212> <213>				
<220> <223>	Synthetic DNA			
<400> ctaatg	88 ggtg ctttagttgg	atgatcctct	cgttgaactg	40
<210> <211>				

		4	03,,3000,00		
<212> <213>	DNA Artificial				
<220> <223>	Synthetic DNA				
<400> ctgccc	89 cgtt agttgaaggg	atgagccttc	agaaaagtt		39
<210> <211> <212> <213>	90 20 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> gccgga	90 caga gatctgtatg				20
<210> <211> <212> <213>	91 45 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> gaagaa	91 ggtt tttatgttga	cgcttttttg	cccaatactg	tataa	45
<212>	92 45 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> caaaaa	92 agcg tcaacataaa	aaccttcttc	aactaacggg	gcagg	45
<210> <211> <212> <213>	93 30 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> aagacg	93 agta cttttctctc	taaatcactt			30
<210> <211> <212> <213>	DNA				
<220> <223>	Synthetic DNA				
<400> aactcg	94 atca aatggtgaca	ggacagcatc			30

<210> <211> <212> <213>	95 45 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> ggagaa	95 taaa gaccctcttc aactaaagca cccattagtt caaca	45
<210> <211> <212> <213>	96 45 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> tgcttt	96 agtt gaagagggtc tttattctcc cacagggttt cgttt	45
<210> <211> <212> <213>	97 45 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> ttttta	97 tatt acagcgagtt ggcgttaaat gaatgaagcg ataga	45
<210> <211> <212> <213>	98 45 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> atttaa	98 cgcc aactcgctgt aatataaaaa ccttcttcaa ctaac	45
<210> <211> <212> <213>	99 30 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> ttgatt	99 gatg ataaattcag gcaggtgcag	30
<210> <211> <212> <213>	100 30 DNA Artificial	
<220>		

Page 35

<223>	Synthetic DNA				
<400> caaagct	100 tga gaaatgttcc ca	atgctcttg			30
<210> <211> <212> <213>	101 45 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> caggagg	101 gaac atatctcttc aa	actaaagca (cccattagtt	caaca	45
<210> <211> <212> <213>	102 45 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> tgcttta	102 agtt gaagagatat gi	ttcctcctg [.]	ttccgggctg	ccccg	45
<210> <211> <212> <213>	103 25 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> attcca	103 gtta ctcgtaatat ag	gttg			25
<210> <211> <212> <213>	104 38 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> gttatc	104 cgct cacaattcac t	tcatcatcc	attagctc		38
<210> <211> <212> <213>	105 38 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> cgtcgt	105 gact gggaaaacct g	ctccaaatc	cgatttcc		38
<210> <211>	106 23				

<212>	DNA				
<213>	Artificial				
<220> <223>	Synthetic DNA				
<400> gtcctg	106 catt tttcgaagtc	tgg			23
<210> <211> <212> <213>					
<220> <223>	Synthetic DNA				
	107 tcct tcaaacaagt	ctgaacaaac			30
<210> <211> <212> <213>	108 45 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> tgcttt	108 agtt gaagattacc	agttccataa	ttccacctcg	ccgac	45
<210> <211> <212> <213>					
<220> <223>	Synthetic DNA				
<400> ttttta	109 tatt acagcgtgtg	tataccattg	tatctgtaga	tacga	45
<210> <211> <212> <213>	110 30 DNA Artificial				
<220> <223>	Synthetic DNA				
<400> gctatg	110 Jatca ttgtaacgaa	aggaaagggg			30
<210> <211> <212> <213>	DNA				
<220> <223>	Synthetic DNA				
<400> ttatgg	111 gaact ggtaatcttc	aactaaagca	cccattagtt Page 3	caaca 7	45

<210> <211> <212> <213>	112 45 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> caatggt	112 tata cacacgctgt aatataaaaa ccttcttcaa ctaac	45
<210> <211> <212> <213>		
<220> <223>	Synthetic DNA	
	113 aaca agaaaaagga gctgctcctc	30
<210> <211> <212> <213>		
<220> <223>	Synthetic DNA	
<400> tgcttta	114 agtt gaagaattca atctccctcc atgtcagctt attta	45
<210> <211> <212> <213>	115 45 DNA Artificial	
<220> <223>	Synthetic DNA	
	115 tatt acagcagaaa cgcctgaaat gaaccggccc tatag	45
<210> <211> <212> <213>	116 30 DNA Artificial	
<220> <223>	Synthetic DNA	
<400> tgtttg	116 acaa aggtagaacg tctgcttatc	30
<210> <211> <212> <213>	117 45 DNA Artificial	
<220>	_ 20	

Page 38

<223>	Synthetic DNA					
<400> ggaggga	117 agat tgaattcttc	aactaaagca	cccattagtt	caaca	4	15
<210> <211> <212> <213>	118 45 DNA Artificial					
<220> <223>	Synthetic DNA					
<400> atttca	118 ggcg tttctgctgt	aatataaaaa	ccttcttcaa	ctaac	4	15
<210> <211> <212> <213>						
<220> <223>	Synthetic DNA					
<400> gaattg	119 tgag cggataac				:	18
<210> <211> <212> <213>	18					
<220> <223>	Synthetic DNA					
<400> gttttc	120 ccag tcacgacg				:	18
<210> <211> <212> <213>	19					
<220> <223>	Synthetic DNA					
<400> caacta	121 aagc acccattag					19
<210> <211> <212> <213>						
<220> <223>	Synthetic DNA					
<400> cttcaa	122 ctaa cggggcag					18